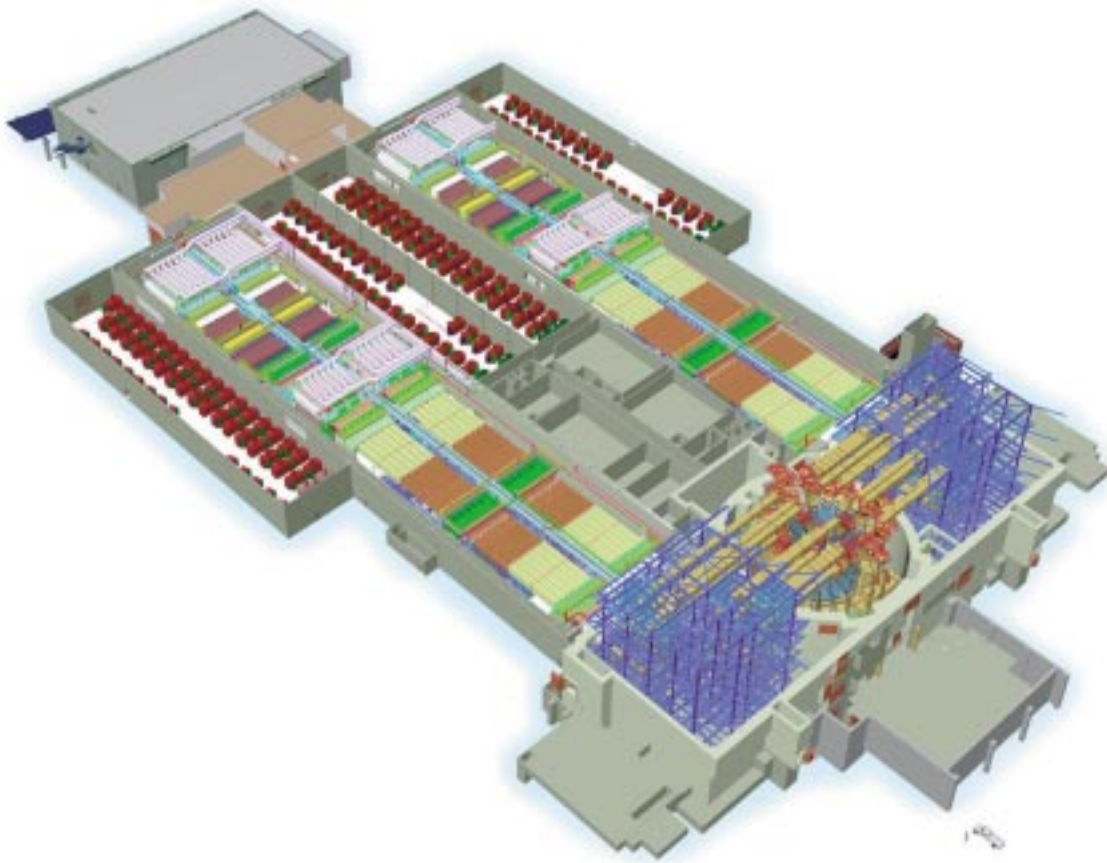


National Ignition Facility Project Site Safety Program



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National Ignition Facility Project Site Safety Program

Ed Moses

Safety and Health Policy for the National Ignition Facility

Environment, safety and health (ES&H) are priority considerations in the planning and execution of work related to the National Ignition Facility (NIF) Project at the Lawrence Livermore National Laboratory (LLNL). The management of the NIF Project is committed to providing a safe work environment for all NIF workers and to protecting the public from hazards associated with the construction, equipment installation, and commissioning of the NIF. All work related to NIF construction, equipment installation, and commissioning will be performed in a manner that protects the safety of the individual worker, preserves the quality of the environment, and prevents property damage.

This policy is applicable to all workers including LLNL, non-LLNL, contractor and subcontractor employees working at the NIF Project site. The NIF Project site includes the B581/B681 site and support areas shown in Appendix B.

Environment, safety, and health policy statements specific to NIF:

- Incidents, whether personal injury or other loss, are unacceptable.
- Management is responsible for safety at the NIF Project site.
- Management, supported by the safety team, will provide consistent guidance and enforcement of a safety program that governs the activities of all workers at the site.
- Workers will be involved in the work planning process, including the identification of hazards and controls.
- Each worker is directly responsible for ensuring his or her own safety, and for creating a safe work environment.
- Working safely is a condition of employment and disciplinary action policies for violations of safety rules will be enforced by management.
- A strong program of independent audit, self-assessment, and surveillance will review the effectiveness of the safety program.
- Any incident that results in personnel injury or illness, damage to buildings or equipment, or impact to the environment, or is considered a significant near-miss will be investigated by management.

The NIF Project will comply with all applicable safety, health, and environmental laws, regulations, and requirements. Anyone willfully or thoughtlessly disregarding standards will be subject to immediate removal from the site.

It is the Project's policy to integrate safety into all aspects of work performed. This approach is based on the seven guiding principles of Integrated Safety Management (ISM) contained in Department of Energy (DOE) P 450.4 Safety Management System Policy.

Approve: _____ Date: _____
Edward I. Moses
NIF Project Manager

Concur: _____ Date: _____
James M. Mecozzi
Team Leader,
ES&H Team 2

Concur: _____ Date: _____
Bruce Warner
NIF Directorate, Deputy Associate Director,
Operations

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Introduction

This Safety Program for the National Ignition Facility (NIF) presents safety protocols and requirements that management and workers shall follow to assure a safe and healthful work environment during the construction, equipment installation, and commissioning activities. As the NIF Project transitions from a conventional facility construction activity to one of equipment installation, commissioning, initial laser operations, and other more routine-like operations, new safety requirements are needed. The NIF Project Site Safety Program (NPSSP) requires that all activities at the NIF Project site be performed in accordance with the *LLNL ES&H Manual*, and the augmented set of controls and processes described in this NIF Project Site Safety Program. More specific requirements for construction activities under the Integration Management and Installation (IMI) contract are provided in the *NIF Infrastructure Health and Safety Plan*, subtier to this program.

Specifically this document:

- Defines the fundamental NIF site safety philosophy,
- Defines the areas covered by this safety program (see Appendix B),
- Identifies management roles and responsibilities,
- Defines core safety management processes,
- Identifies NIF site-specific safety requirements, and

This NPSSP sets forth the responsibilities, requirements, rules, policies, and regulations for all workers involved in the construction, equipment and infrastructure installation, acceptance testing, and commissioning during the period from October 2001 through the completion of the installation of the beampath infrastructure. During this period, all workers are required to implement measures to create a universal awareness that promotes safe practice at the work site and will achieve NIF management objectives in preventing accidents and illnesses. All ES&H requirements are consistent with the *LLNL ES&H Manual*. This NPSSP, supported by lower tier safety plans for specific activities (e.g., the Beampath Infrastructure System [BIS] IMI *National Ignition Facility Infrastructure Health and Safety Plan* for IMI Construction activities) and implementing procedures (e.g., Management Walkabout, special work procedures, etc.), is a comprehensive safety program that applies to all NIF workers on the NIF Project site. The NIF Project site includes the B581/B681 site and support areas shown in Appendix B.

All visitors to the NIF Project Site shall be controlled through implementation of the NIF Site Tour Procedure (see NIF Procedure 5.7, NIF Site Tours).

Integrated Safety Management (ISM) is practiced in the execution of all activities associated with the NIF Project. The seven Principles of ISM are:

- Line management is responsible for safety.
- Clear roles and responsibilities are established and maintained.
- Personnel possess competence commensurate with responsibilities.
- Resource allocations are balanced, making ES&H a priority in project planning and execution.
- Safety requirements are identified and implemented.
- Hazard controls are tailored to the project work.
- Work activities are authorized before they begin.

The following five Core Functions are used to implement ISM:

- Define scope of work.
- Analyze hazards.
- Develop and implement controls.
- Perform work.
- Feedback and improve.

Successful application of the Principles of ISM is predicated on the proper implementation of the Core Functions when evaluating and controlling all activities. The NPSSP identifies how and where the Principles and Core Functions are to be implemented. Appendix C shows which specific sections of the NPSSP implement various aspects of ISM. NIF Project Control Policy 1.11 contains an attachment that lists other NIF Project documents that address the elements of ISM.

II. Project Organization and Management Responsibilities

The Project Manager is responsible for safety at the NIF Project site. Three primary functions are active on the NIF Project Site:

1. The maintenance and operation of the Conventional Facility; this work is managed by the BIS Associate Project Manager (APM).
2. The installation, assembly, commissioning and operation of the laser and its supporting utilities; this work is performed by the line organizations (Beampath Infrastructure System [BIS]; Line-Replaceable Units [LRUs]; Laser Materials and Optics Technology [LMOT]; Integrated Computer Control System [ICCS]; Assembly, Installation, and Refurbishment [AIR]; Target Experimental Systems [TES]) and is managed by NIF Systems Engineering through the Area Integration Managers (AIMs), Integrated Product Teams (IPTs), and Commissioning and Operations Managers.
3. Laydown, staging, and storage (exterior to B581/B681) of components and/or equipment that supports the installation, assembly, commissioning and operation of the laser and its supporting utilities; this work is performed by the BIS Associate Project Manager and Laser Equipment Production Manager (see Appendix B).

The Project Manager has delegated safety responsibility for these activities as follows:

1. The Commissioning and Operations Managers and AIMs are Authorizing Individuals (AIs) for B581/B681.
 - a. IPT Leaders may be AIs as further delegated by the AIM.
2. The BIS APM and Laser Equipment Production Manager are AIs for laydown, staging, and storage activities that occur external to B581/B681.
3. The APMs and their subordinate managers are Responsible Individuals (RIs).

The NIF Associate Director has appointed the Site Manager as the Facility Point of Contact (FPOC) for the NIF Project site (indicated on Figure 1).

In some instances, and as dictated by the nature of the activity and documented in the Job Hazards Analysis/Integration Work Sheet (JHA/IWS), the AI/RI designation may be adjusted. Work on the NIF Project Site will be coordinated by the Field Area Managers (FAMs) for their geographical areas. FAMs report to the AIMs; FAMs act on behalf of the AIMs and will coordinate safety in their areas. Overall work coordination will be performed by the Facility Integration Team (FIT).

It is the responsibility of all workers to perform work safely and in accordance with this NPSSP. Workers at the site are accountable for their own safety and the safety of

others who could be impacted by their activities. Organizations and workers performing supervisory roles have specific responsibilities for carrying out safety-related activities. Workers who perform supervisory functions have increased safety obligations. Management and supervisory workers may delegate safety authority to others in their organizations; however, the accountability for safety performance and assurance is not transferable.

Project management, supported by the safety team and the NIF Site Manager, will provide consistent guidance and enforcement of a NIF Project Site Safety Program that governs the activities of all workers (LLNL and Contractor) at the site.

The NIF Project organization is described in Figure 1. Appendix D describes the Project management organization responsibilities and interfaces regarding ES&H at the NIF Project Site. Only specific site safety-related responsibilities are listed. Additional responsibilities are given in the *NIF Project Management Descriptions*. The responsibility definitions are consistent with the *LLNL ES&H Manual* and *NIF Project Execution Plan*. Safety Assurance personnel, Safety Managers, and Safety Professionals support the Project management organization.

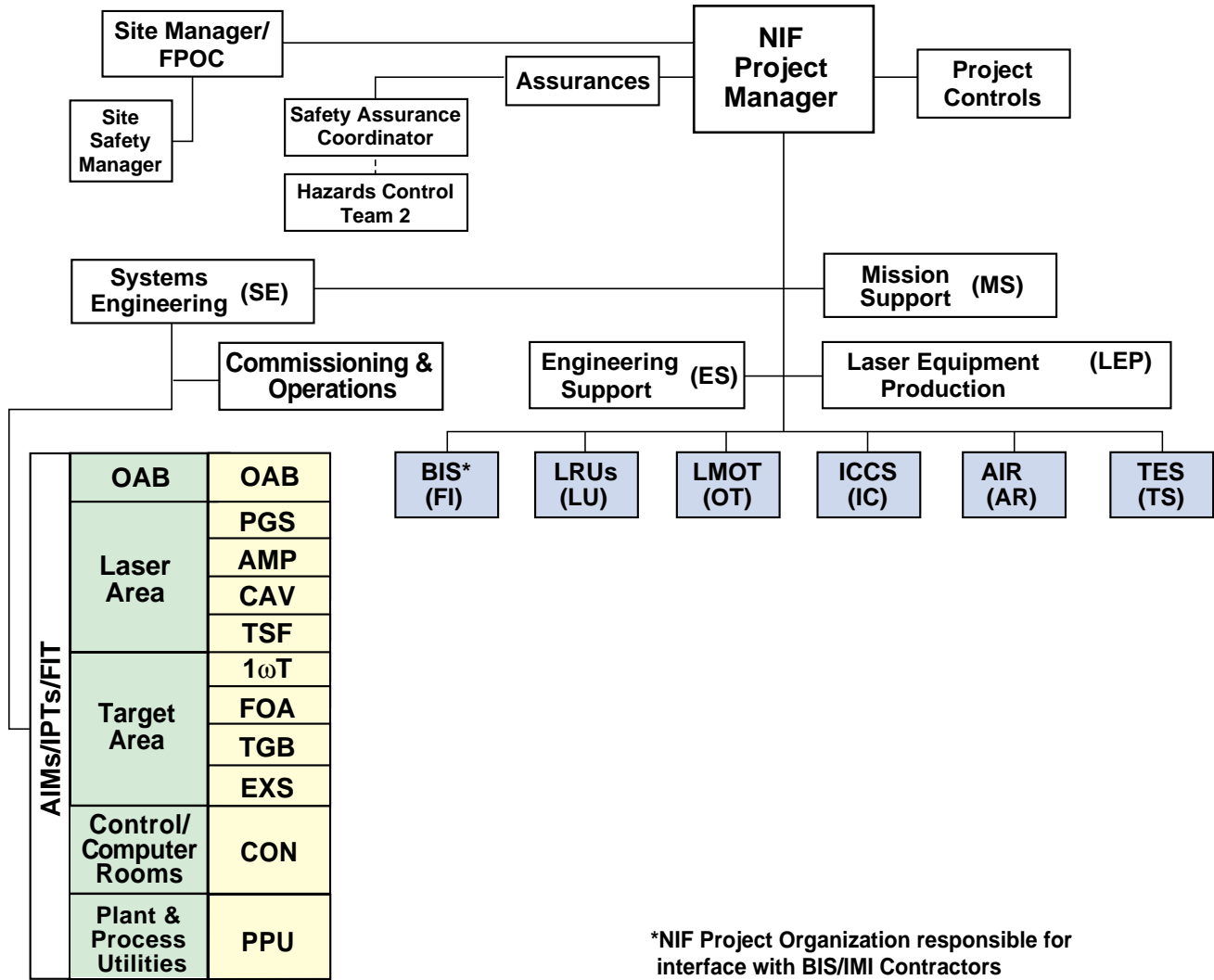


Figure 1. NIF organization as it relates to site safety.

III. Core Safety Management Processes

The purpose of this chapter is to provide specific expectations with respect to safety management of work activities. **THE FUNDAMENTAL ASSUMPTION IS THAT ALL INCIDENTS CAN BE PREVENTED!**

Core safety management processes are the essential management activities that shall be used to control work safety and reliability. These activities focus on the following operational aspects of safety management:

- Setting expectations and monitoring work.
- Work planning, work authorization, and providing feedback (incident investigation, lessons learned, etc.).

It is management's responsibility to implement and monitor these core processes and ensure their efficiency through continuous improvement.

III.A Setting Management Expectations and Monitoring Work

It is management's responsibility to establish how work is conducted and monitored on the NIF Project site. The purpose of these management processes is to align senior management expectations and the performance of mid-level managers, supervisors, and workers.

III.A.1 Contractor Pre-Qualification and Post-Evaluation Process

In addition to other criteria, contractors will be selected based on past documented performance indicators consistent with expectations of this NPSSP. Contractors not demonstrating exceptional past performance in safety will not be invited to participate in NIF Project Site work. A copy of the NPSSP (and the *NIF Infrastructure Health and Safety Plan* for BIS IMI work) will be provided to all contractors and subcontractors prior to the placing of their bids. Any exceptions taken to the implementation of processes and procedures in either the NPSSP or the *NIF Infrastructure Health and Safety Plan* will be submitted in writing and all issues will be resolved, prior to the execution of a contract with those firms and prior to their personnel entering the NIF Project Site.

III.A.2 Disciplinary Process for Safety Violations

Anyone violating site safety rules will be subject to discipline. Contractor's working under the IMI contract will be subject to the safety discipline program described in the

NIF Infrastructure Health and Safety Plan. LLNL employees and direct contractors will be subject to the LLNL disciplinary process.

III.A.3 NIF Project Site Access

Individuals may access the NIF Project site as either a visitor, escort, or site worker. Anyone entering the site must complete appropriate site orientation and safety training established by NIF Project Management. NIF Managers and Supervisors are responsible for seeing that all individuals entering the site have completed the proper training prior to access.

Refer to the following NIF Project Procedures for details on the process for gaining access to the site and training requirements:

5.5 NIF Site Access – for anyone scheduled to complete work tasks on the NIF Project site;

5.7 NIF Site Tours – for visitors and escorts.

III.A.4 Site Orientation Safety Training

A site orientation safety training course has been developed, managed, and delivered by management personnel. The purpose of the training is to provide an overview of the NIF Project site, general hazards, access control procedures, and basic roles and responsibilities. This is the initial step in the site access process for all personnel performing work activities on the NIF Project Site. Each contractor/subcontractor will provide an additional orientation for all newly hired or rehired employees.

All NIF personnel must attend the required training course to receive approval for access to the NIF Project site. Personnel are also required to attend courses that prepare them for safe work activities, which are coordinated through their line supervision. Site Access Safety courses cover:

- Project safety orientation, which includes an introduction to site safety, Job Hazards Analysis/Integration Work Sheets, Safe Plans of Action, and incident reporting.
- Clean construction protocol.

See NIF Procedure 5.5 for site access requirements, which includes training requirements. Courses may be identified, scheduled, and recorded through the LLNL L-Train Training database.

III.A.5 NIF Safety Management Training

The purpose of NIF Safety Management training is to inform all Project participants whose employees perform work on the NIF Project Site of the following:

- NIF Safety Management Culture.
- Integrated “Owner Team” Responsibilities.
- Walkabout Process.
- JHA/IWS, SPA, Safety Observation Report, and other Safety Management processes.

The course is a management course that is delivered in part by line managers.

III.A.6 Construction Work Activities

Construction work performed at the NIF Project site under the IMI contract must also be conducted in accordance with the *NIF Infrastructure Health and Safety Plan*. Construction work performed outside the IMI contract and non-construction work will be conducted in accordance with this NIF Project Site Safety Program.

III.A.7 Augmented Work Controls

The NPSSP requires that all activities at the NIF Project site be performed in accordance with the *LLNL ES&H Manual*, and an augmented set of controls. The augmented controls include the work processes described in Section III of this document, and the safety requirements described in Appendix A.

III.A.8 Walkabout Process for Evaluating Safety Implementation

All levels of management, supported by safety personnel, regularly viewing site work will perform walkabouts. The purpose of the walkabout is to:

- Assess management and work execution against the requirements of this NPSSP and the *NIF Infrastructure Health and Safety Plan* at the NIF Project site.
- Identify and correct the problems that hinder the NIF Project from achieving its safety objectives described in the NPSSP.
- Evaluate all levels of safety implementation at the site.

These management safety assessments will be supplemented by independent audits of the NIF Project Site Safety Program.

Details of the NIF Walkabout process are provided in the NIF Project Procedure 5.13, Layered Line Management Walkabout.

III.A.9 Emergency Response and Notification

Assistance for emergencies can be requested by telephone through the LLNL Hazards Control Department's Emergency Management Division Dispatch Center by dialing 911 from an on-site LLNL telephone or 447-6880 from a cellular telephone or other telephone that is not connected to the LLNL telephone exchange (LLIX). Response to emergencies should be in accordance with the NIF Programs Directorate Plan, "Do You Know What To Do in an Emergency," NIF-0064673. The Assembly Point, where personnel evacuating the NIF Project site must congregate in an emergency, is located adjacent to the Safety Trailer (T6870) in Kirschbaum field.

III.A.10 Safety Leadership Team

The Safety Leadership Team is a site worker-based team driven by the site leaders and incorporating stewards from all the crafts, creating a true link to the worker. The objective is to establish and maintain the link between site workers and site leaders, thus driving the safety culture to the workforce. These teams perform safety observations at the peer level (worker to worker) and are applying the behavioral-based safety programs. This team process is a key element of the "Feedback and Improvement" function of ISM.

III.B Work Planning and Authorization Process

Proper work planning and authorization are crucial for achieving safety. Work planning requires:

- (1) developing the scope of work,
- (2) analyzing the hazards, and
- (3) developing a plan to mitigate those hazards.

Work must be coordinated and authorized before it can proceed and the work area and activity reviewed before the start of each work task. If incidents occur they must be investigated and actions taken to mitigate future occurrence. This process follows the overall safe work practices as outlined in the ISM program.

While each employer is primarily responsible for the safety of his/her worker's safety, the NIF NPSSP has implemented specific processes that are mandatory for all work activity on the NIF Project site. Procedures have been developed and are consistently applied for all work on the NIF Project Site. These are discussed in the sections to follow.

III.B.1 NIF Project Site Work Authorization Procedure

This procedure controls site access and ensures that the work is properly planned and authorized. Work is authorized and approval given to perform work at the NIF Project site only after completion of a Job Hazards Analysis/Integration Worksheet (JHA/IWS) form (and as needed for LLNL work, the Operational Safety Plan [OSP] attachment). This form is used to document the process of pre-job safety planning and hazard recognition. It identifies and analyzes the steps of a work activity for hazards and control measures prior to the work being performed.

The JHA/IWS:

- Identifies the tasks that need control.
- Identifies the hazards.
- Establishes the controls.
- Defines specific training prerequisites.

For LLNL work, the JHA/IWS form determines whether or not additional safety documentation in the form of an OSP is required. All groups working on the NIF Project site including NIF elements, LLNL Plant Maintenance and Operations and their contractors, supplemental labor, labor only contractors, and JFI contractors/subcontractors and their subtiers are responsible to complete all or part of the JHA/IWS form and generally receive approval one week prior to performing the operation and or activity. The NIF Project site Work Authorization Procedure is fully described in the NIF Project Control Manual, Project Procedure 5.12. Only workers approved and authorized by name on the Work Authorization List will be allowed to perform work activities on the site. The Site Manager's office will maintain the Work Authorization List. In some instances, after an area or system has been turned over to NIF Commissioning, a special work permit may be required. Details of the work coordination process and the special work permit are described in Project Procedures 5.6, NIF Project Site Work Coordination and Project Procedure 5.8, NIF Work Permits.

In certain instances, if a significant new hazard is introduced, a Management Pre-start Review may be required by the NIF Project Manager prior to work authorization. An identified set of Management Pre-start Reviews exists in the NIF Integrated Project schedule. The Management Pre-start Review process is described in NIF Project Procedure 9.3, Management Pre-start Reviews.

III.B.2 Safe Plan of Action (SPA) Procedure

The purpose of the SPA is to ensure that all task leaders:

- Plan and review work daily.

- Assess the hazards in the actual work area and develop ways to mitigate those hazards consistent with the IWS/JHA or contract/JHA that authorizes the work.
- Form and identify a team by involving workers in daily work planning and obtaining feedback from all team members.
- Obtain documented team acknowledgement of understanding of hazards and the associated controls.

All groups working on the NIF site are responsible for completing an SPA prior to performing the operation and or construction activity. This process is fully described in the NIF Project Control Manual, Project Procedure 5.10, Safe Plan of Action.

III.B.3 Permits and Authorizations

There are several permits and authorizations required for work on the NIF Project site. The fundamental premise for workers on the site is that all areas and operational systems within the NIF Project site are owned by the AIMs and controlled by the FAMs. In certain instances, work within a geographical area of the facility or on an operational system requires a permit; these geographical areas will be clearly posted and these systems will be clearly labeled. In addition to these area and/or system permits, activity “type” permits may be required, including hot work, excavations and on-grade slab penetration, penetration of concrete structures (floors, walls, and ceilings), work in confined spaces, work on energized equipment, and air and storm water work. Also included are authorizations for work near energized equipment and crane and hoist operation.

NIF workers are responsible for obtaining or assisting with the processing of these permits and authorizations as necessary prior to starting the defined activity. Caution: All required permits and authorizations may not be addressed in this section, and any work activity that presents unusual work conditions impacting ES&H issues should be brought to the attention of line management. Please refer to NPSSP, Appendix A, for Permits and Authorizations requirements as well as Procedure 5.8, NIF Work Permits.

III.B.4 Incident Investigations and Lessons Learned

The timely evaluation of incidents is a valuable component of ISM to provide feedback and improvement to the safety process. It is the policy of the NIF Project to track all incidents and to investigate all incidents related to NIF Project work that result in personnel injury or illness, damage to buildings or equipment, or impact to the environment, as a result of an incident or natural phenomena. The Incident Investigation Procedure provides a basis for a Lessons Learned program so that the NIF Project can learn from any less-than-adequate management or work performance.

Incidents include personal injury, equipment damage, and near misses. Near miss incidents are events or a series of events that could have resulted in serious injury or illness or property damage, but did not due to circumstances or changes in events. The final decision on classifying an incident as a near miss will be made by the Project Manager, in consultation with Assurances, safety support, and the line management involved with the incident.

The analysis of incidents shall be considered a management function. All incidents shall be reported immediately to the work supervisor. The incident will then be reported, through the management chain, to the Site Manager.

- All NIF workers are responsible for reporting incidents to their supervisors.
- Supervisors are responsible for making appropriate notifications.
- Management is responsible for investigating incidents.
- Causes will be identified.
- Lessons Learned will be published.
- Corrective actions will be verified.

The Site Manager shall designate managers who will be trained in the NIF Incident Investigation process. The Site Manager shall monitor the implementation and manage the incident investigation process. This procedure is fully described in the NIF Project Procedure 5.11, NIF Project Site Incident Investigation.

III.B.5 Work Coordination

All work that is executed on the NIF Project Site is to be planned and coordinated. The site has become increasingly complex as construction, commissioning, and operations activities are occurring concurrently, requiring a higher level of coordination. FAMs are charged with ensuring that only work that has been planned is executed on the site—no unplanned work shall occur on the NIF Project Site; reference NIF Procedure 5.6, NIF Project Site Work Coordination.

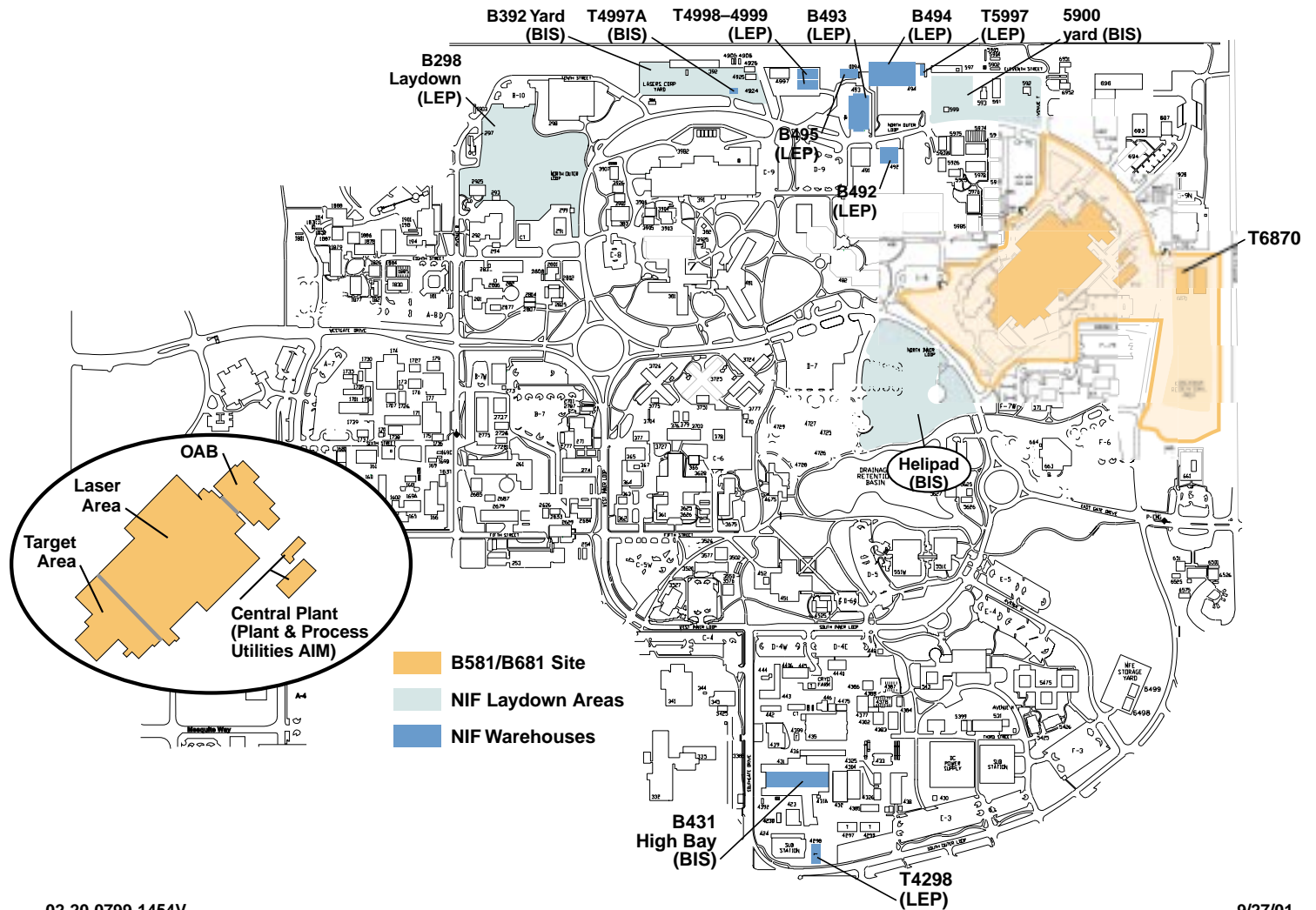
Appendix B

Areas Covered by the NIF Project Site Safety Program

For the purpose of determining where the requirements of the NPSSP, the NIF Project Site includes the laydown/staging and support areas listed below. The NPSSP requirements apply to NIF contractors and subcontractors, LLNL employees and non-LLNL employees, when working in these areas.

Areas of NIF Project Site	FPOC	AI
Control Room, unclassified and classified computer room, cable plant	Site Manager	Control Room/ Computer Room AIM
Switchyards, target bay, diagnostics Bldg	Site Manager	Target Area AIM
Laser bays, capacitor bays, MOR, Strategy room, document room, entry lobby, OAB Corridor, PAMMA	Site Manager	Laser Area AIM
OAB and OAB basement (not including utility rooms/lofts)	Site Manager	OAB AIM
Central Plant, equipment mezzanines, OAB (utility rooms/lofts), in-facility utilities, exterior utility equipment, environmental shelter, utility pads and skids	Site Manager	Plant and Process Utilities AIM
Facility exterior, site perimeter, helipad, all B581/B681 site trailers, Kirschbaum field, B431, 392 Corpyard, 5900 yard, T4997A	Site Manager	BIS APM
B298 laydown, B492, B493, B494, B495, T4998, T4999, T4298, T5997	Site Manager	Laser Equipment Production Manager

NIF Project Areas Covered by the NPSSP



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Appendix C

Sections of the NIF Project Site Safety Program that Implement the Various Guiding Principles and Core Functions of ISM

DOE P 450.1, Safety Management Systems "ISMS" Element	Title	Applicable Section of this NIF Project Site Safety Program
Guiding Principle 1	Line Management Responsibility for Safety	Chapter II: Project Organization and Management Responsibilities
		Appendix D: Management Responsibilities
Guiding Principle 2	Clear Roles and Responsibilities	Chapter II: Project Organization and Management Responsibilities
		Appendix D: Management Responsibilities
		Appendix A: Responsibilities (in each subsection)
Guiding Principle 3	Competence Commensurate with Responsibilities	Section III.A.4: Site Orientation Safety Training
		Section III A.5: NIF Safety Management Training
		Section III.B.1: NIF Project Site Work Authorization Procedure
		Project Procedure 5.12: NIF Project Site Work Authorization Procedure
Guiding Principle 4	Balanced Priorities	Safety and Health Policy for the National Ignition Facility
		Section II.A.1: Project Manager (Responsibilities)
		Section III.B: Work Planning and Authorization Process

Guiding Principle 5	Identification of Safety Standards and Requirements	Section III.B: Work Planning and Authorization Process
		Section III.B.2: Safe Plan of Action (SPA)
		Project Procedure 5.10 [*] : Safe Plan of Action
		Section III B.1: NIF Project Site Work Authorization Procedure
		Project Procedure 5.12 [*] : NIF Project Site Work Authorization Procedure
		Appendix A
Guiding Principle 6	Hazards Control Tailored to the Work being Performed	Section III.B: Work Planning and Authorization Process
		Section III.B.1: NIF Project Site Work Authorization Procedure
		Project Procedure 5.8 [*] : NIF Work Permits
		Project Procedure 5.12 [*] : NIF Project Site Work Authorization Procedure
		Section III.B.2: Safe Plan of Action (SPA)
		Project Procedure 5.10 [*] : Safe Plan of Action
Guiding Principle 7	Operations Authorization	Appendix A
		Section III.B: Work Planning and Authorization Process
		Section III.B.2: Safe Plan of Action (SPA)
		Project Procedure 5.8 [*] : NIF Work Permits
		Project Procedure 5.10 [*] : Safe Plan of Action
		Section III B.1: NIF Project Site Work Authorization Procedure
		Procedure 5.6 [*] : NIF Project Site Work Coordination
		Project Procedure 5.12 [*] : NIF Project Site Work Authorization Procedure

Core Function 1	Define the Scope of Work	Section III.B: Work Planning and Authorization Process
		Section III.B.1: NIF Project Site Work Authorization Procedure
		Project Procedure 5.12 [*] : NIF Project Site Work Authorization Procedure
		Section III.B.2: Safe Plan of Action (SPA)
		Project Procedure 5.10 [*] : Safe Plan of Action
Core Function 2	Analyze Hazards	Section III.B.1: NIF Project Site Work Authorization Procedure
		Project Procedure 5.12 [*] : NIF Project Site Work Authorization Procedure
		Section III.B.2: Safe Plan of Action (SPA)
		Project Procedure 5.10 [*] : Safe Plan of Action
Core Function 3	Develop and Implement Controls	Section III.B.2: Safe Plan of Action (SPA)
		Project Procedure 5.10 [*] : Safe Plan of Action
		Section III B.1: NIF Project Site Work Authorization Procedure
		Project Procedure 5.6 [*] : NIF Project Site Work Coordination
		Project Procedure 5.8 [*] : NIF Work Permits
		Project Procedure 5.12 [*] : NIF Project Site Work Authorization Procedure
		Appendix A
Core Function 4	Perform Work	Section III.B.2: Safe Plan of Action (SPA)
		Project Procedure 5.10 [*] : Safe Plan of Action
Core Function 5	Feedback and Improvement	Section III.A: Setting Management Expectations, Monitoring Work and Providing Feedback
		Project Procedure 5.11 [*] : NIF Incident Analysis Procedure
		Project Procedure 5.13 [*] : Layered Management Walkabout Process
		Section III.B.4: Incident Investigation and Lessons Learned
		Section III.A.10 Safety Leadership Team

^{*}Project Procedures referenced above are based upon the revision in force as of the effective date of this Construction Safety Program.

Appendix D

Management Responsibilities

D.1 Project Management

D.1.1 NIF Project Manager

The NIF Project Manager, supported by NIF Project management and staff, has the overall authority and responsibility for the execution of the NIF Project.

The Project Manager will:

- Supported by the Assurance Office, ensure that the NIF Project meets all applicable DOE, Federal, State, and Regional ES&H, Quality Assurance, and security requirements.
- Assure that NIF Project work is conducted under the principles and requirements of the LLNL Integrated Safety Management (ISM) system implementation of DOE Policy 450.4, Safety Management System Policy, NIF Project Control Procedure 1.11 (Integrated Safety Management), and the NIF Programs Directorate Integrated Safety Management System Implementation Plan (*NIF-0054160*).
- Assure that all Project members are trained and qualified to perform their assigned tasks and ensure that all required ISM-related training is provided.
- Serve as the AI for work at the NIF Project site. The Project Manager may delegate the responsibility and authority of the Authorizing Individual to lower-tier NIF Project managers as appropriate, and shall assure that these individuals are trained and knowledgeable of their ISM duties and responsibilities.
- Provide adequate funding and personnel resources for administering this safety program for the NIF.
- Approve this NPSSP.

D.1.2 Systems Engineering Organization

The Systems Engineering organization includes the Systems Engineering Manager, the Commissioning and Operations Managers, the Area Integration Teams, and the Facility Integration Team (FIT) Leader. Systems Engineering performs the coordination and technical management of the installation, assembly, commissioning, and operation of the laser and its process utilities. Key elements of Systems Engineering pertinent to the NPSSP are discussed below.

D.1.2.1 Systems Engineering Manager

The Systems Engineering Manager reports to the Project Manager and is responsible to:

- Ensure that System Engineering members are trained and qualified to perform their assigned tasks and that the Commissioning Manager, Operations Manager, AIM and IPT Leaders are trained and qualified for their roles as AIs and RIs, if so designated.
- Provide integration direction and coordination through the FITs, AIMS, and IPTs.

D.1.2.2 Commissioning and Operations Managers

The Commissioning and Operations Managers report to the Systems Engineering Manager and are responsible to:

- Prepare the NIF Commissioning Plan, the master plan for commissioning and transitioning to operations of B581/681.
- Coordinate the activities of the AIMS, IPTs, and APMs in the performance of the commissioning tests such as the integrated laser tests.
- With the ES&H Assurance Manager, coordinate the MPR process.
- Serve as the Authorizing Individual in accordance with the NIF Project Implementation of ISM when designated to do so by the Project Manager.
- Develop, through the ES&H Assurance Manager, the Authorization Basis (e.g., Final Safety Analysis Report [FSAR], Radiation Protection Plan, etc.) for the B581/681 complex.

D.1.2.3 Area Integration Teams

Each Area Integration Team (AIT) consists of the AIM, the IPT Leaders, FAMs, and other designated individuals who may be required to deliver the commissioned system. There are five Area Integration Teams who are responsible for the OAB, Laser Building, the Target Building, the Control Room/Computer Rooms, and the Plant and Process Utilities. The AIMS report to the Project Manager through Systems Engineering. The responsibilities of each AIM include:

- Serving as the AI when so designated by the NIF Project Manager in accordance with the NIF Project Implementation of ISM. The NIF Project Manager may authorize the AIT leader to designate AIs in his/her area.

D.1.2.3.1 Integrated Product Teams

Integrated Product Teams (IPTs) provide a multidisciplinary, multiorganizational, interdependent team approach to meet specified mission requirements. The IPTs report to the Area Integration Manager for their geographical area.

- It is the primary role of the IPT to facilitate communication among team members and effect timely decision making in the Project. The IPT Leaders shall:

- Serve as an AI when so designated by the NIF Project Manager or the responsible AIT leader in accordance with the NIF Project implementation of ISM.
- Work with the MPR committees to develop an appropriate MPR plan, including definition of deliverables to be reviewed.
- Participate, as appropriate, in incident investigations.

D.1.2.3.2 Field Area Managers

Field Area Managers (FAMs) have the authority to control all work within their assigned area. They report to the AIM for their area and will:

- Support the AIMS in collecting information, assessing interfaces, and confirming that work can be performed safely in an area before it is authorized.
- Identify and then issue permits as required for work in permitted spaces and/or permitted systems.
- Interface with the APMs and IPT Leaders as appropriate to resolve conflicts and work priorities within their assigned areas.
- Ensure that facility procedures for safety (set forth in the NPSSP and subtier safety plans and procedures), QA, and work processes are followed.
- Ensure that the assigned area activities are planned, hazards evaluated, and effort coordinated through use of the JHA /IWS procedure.
- Coordinate safety in their assigned area and monitor compliance to the SPA procedure.
- Concur on work to be performed within the area prior to its commencement.
- Be responsible for definition of and control of interfaces between areas with the other FAMs.
- Participate, as appropriate, in incident investigations.

D.1.3 Facility Integration Team

The Facility Integration Team (FIT) consists of the FIT Leader, the Site Manager, the Area Integration Managers, the Commissioning and Operations Managers, the Field Area Managers, the BIS APM, the AIR APM, and the ES&H Assurance Manager. Additional NIF managers may be included as required.

The FIT Leader reports to the Project Manager through Systems Engineering and is responsible to:

- Coordinate the overall work on the NIF site through the FAMs.
- Review all JHA/IWSs for work at the NIF site, ensuring that the proposed work has been appropriately factored into the work schedule for the site.

- With the ES&H Assurance Manager and the Site Manager, coordinate the development of core work procedures and standards for working on the NIF site (e.g., access training, work authorization, work coordination).
- Concur on the content of the NIF Project Site Safety Program; with the Site Manager and the ES&H Assurance Manager review the document at least annually and prepare updates to the document as needed.

The FIT is responsible to:

- Provide a centralized function of 3-week/3-month look-ahead planning for all work occurring on the NIF site and ensure that no new hazards have been created by planned and ongoing work that have not been mitigated.
- Facilitate conflict resolution when multiple parties need space at the same time and where, as a result, new hazards could potentially arise.
- Assess and recommend resolution to issues associated with parallel occupancy in the facility for concurrent construction, commissioning and operations activities (e.g., hazard level determination, work shift separation, work “start” requirements).

D.1.4 Site Manager Organization

The Site Manager Organization is responsible for the control of the Conventional Facility, site access control, site–institutional interface, and oversight of the implementation of this NPSSP. The Site Manager is appointed by the NIF Project Manager. The Site Manager reports to the NIF Project Manager and is responsible to:

- Act as the primary FPOC for the main NIF Project site.
- As FPOC, concur on all JHAs/IWSs and OSPs for work in the defined facilities ensuring that the proposed work is within the authorization basis for the subject area.
- Control requirements for access and access to the site. This includes safety, security, and training requirements; develop training, as needed.
- With the FIT Leader and the ES&H Assurance Manager review the document at least annually and prepare updates to the document as needed.
- Ensure that the Site Emergency Preparedness Plan and provisions are effective and current.
- Ensure that the overall site environmental permits are carried out working with the ES&H Assurance Manager (e.g., Storm Water Pollution Prevention Plan for the NIF site).
- Participate, as appropriate, in incident investigations.
- Assure that the NIF facilities are operated in accordance with the NIF Programs Directorate Integrated Safety Management System Implementation Plan, *NIF-0054160*.
- Interface with the institution (e.g., Plant Engineering) as necessary to support the work activities in their area.

- Review the results of the audits for compliance, for recommendations made for correction and prevention of recurrence, and for follow-up measures taken to develop compliance.
- Verify that the following safety requirements are met for contractors/subcontractors:
 - Implementation of the site Substance and Alcohol Abuse Prevention Program.
 - Work activities are preplanned to identify and control any safety and health issues that may pose a hazard to workers or others.
 - Specific job safety training is completed.
 - Investigation of all injuries, accidents, and incidents are conducted.
 - Safety inspections with Conventional Facilities and BIS contractors/subcontractors are reviewed.
 - JHA/IWSs and daily SPAs are performed.
 - Contractor/subcontractor safety plans for the Conventional Facility are reviewed for adequacy prior to contractor/subcontractor mobilization.
- Develop safe work recognition and disciplinary programs.

D.1.5 Associate Project Managers

The Associate Project Managers (APMs) are responsible for the scope, schedule, budget, and technical and safety performance for their assigned NWBS elements. Associate Project Managers report to the NIF Project Manager and are responsible to:

- Serve as the primary Responsible Individuals at the site, delegating the RI role to their subordinate managers. Assure that subordinate RIs, supervisors, and workers under their supervision are knowledgeable in ISM requirements and NIF site work practices.
- When not acting as the RI themselves, concur on JHA/IWSs covering work to be performed by their organization.
- Ensure the development of JHA/IWSs and Safe Plans of Action (SPAs) for work at the NIF Project site. For all work sites under their supervision, ensure the development, if required, of OSPs to evaluate the hazards and the mitigation/prevention controls needed to ensure the safety of work.
- Ensure that the workers under their supervision are current in the required safety training.
- Ensure safe work performance and obtain feedback and implement improvements.
- Ensure compliance with applicable environmental permits.
- Participate, as appropriate, in incident investigations.

- Work with the MPR Committees to develop an appropriate MPR plan defining the deliverables to be reviewed. Provide the agreed upon deliverables to the MPR committee for their review.

The APMs manage the following areas of the NIF Project:

- Line Replaceable Units (LRUs)
- Integrated Computer Control Systems (ICCS)
- Target Experimental Systems (TES)
- Laser Materials and Optics Technology (LMOT)
- Assembly, Installation, and Refurbishment (AIR)
- Beampath Infrastructure Systems (BIS)

D.1.5.1 Beampath Infrastructure System Associate Project Manager

In addition to the APM responsibilities identified above, the BIS APM also will act as:

- The overall interface with the BIS IMI Construction Management Program Manager.
- Ensure that all BIS/IMI contractors, subcontractors, and others implement the NPSSP on the site.
- The AI for the Facility exterior, site perimeter, helipad, T6870, B431, 392 Corpyard, 5900 yard.

D.1.5.2 Laser Equipment Production Manager

The Laser Equipment Production (LEP) Manager is responsible for the procurement and production of the NIF equipment. This includes the development and implementation of production strategies, preparation and management of production contracts, and the operation of NIF receiving and storage functions and the associated production control functions. At the NIF Project Site, the LEP Manager is responsible to act as:

- The AI for B298 laydown, B493, B494, T4997, T4997A, T4998, T4999, and T4298.

D.2 Safety Assurance

D.2.1 NIF ES&H Assurance Manager

The NIF ES&H Assurance Manager is the support manager responsible for the oversight of ES&H aspects of the NIF Project. He/she reports directly to the NIF Project Manager and for ES&H will:

- With the Site Manager and the FIT Leader review the document at least annually and prepare updates to the document as needed.

- With the FIT Leader and Site Manager, coordinate the development of core work procedures and standards for working on the NIF site (e.g., job hazards analysis (JHA), access training, work authorization).
- Provide safety support to the NIF Project Site through the Safety Assurance Coordinator and Hazards Control Team 2.
- Perform safety analyses of NIF construction and operation: *Preliminary Hazards Analysis* (PHA), *Preliminary Safety Analysis Report* (PSAR), and *Final Safety Analysis Report* (FSAR) with Operational Safety Requirements (OSRs).
- Obtain the National Environmental Policy Act (NEPA) determination and the environmental permits. Assure that the requirements of the permits are met.
- Prepare and ensure implementation of the ES&H Management Plan.
- Participate on the Facility Integration Team and lead the Environmental and Safety Working Group to review Project ES&H issues.
- Provide monitoring that all applicable federal, state, and local ES&H regulations are followed.
- Interface with the DOE ES&H Manager, outside regulatory agencies, and NIF Programs Assurance Office.
- Oversee the NIF Occurrence and Incident Reporting Program for the NIF Project site.
- Develop and implement the Project Lessons Learned Program.

D.2.1.1 NIF Safety Assurance Coordinator

The NIF Safety Assurance Coordinator reports to the NIF ES&H Assurance Manager and will:

- Request and coordinate support of the Hazards Control ES&H Team 2 to resolve specific safety and environmental issues.
- Oversee compliance with environmental permits and the Waste Minimization/Pollution Prevention Plan the Mitigation Action Plan, Programmatic Environmental Impact Statement, etc.
- Act as the interface with DOE and other LLNL programs and directorates on ES&H issues pertaining to the NIF Project and the construction site activities.
- Track ES&H deficiencies and status of resolution during construction and commissioning of the NIF.
- Review safety plans of primary contractors/subcontractors to ensure such plans are consistent with LLNL policies, the NIF Project Site Safety Program, and the NIF Facilities requirements.
- Perform safety audits of the NIF Project site.

- Working with the Site Safety Manager, assist the Site Manager and Field Area Managers with the coordination of concurrent construction site work activities related to ES&H among the NIF elements.
- Working with the Site Safety Manager, act as an interface among NIF elements on ES&H issues pertaining to the work activities at the NIF Project site.
- Working with the Site Safety Manager, assist in the resolution of any issues related to ES&H issues among NIF elements.
- Working with the Site Safety Manager, make recommendations on issues of conflict (pertaining to ES&H) among NIF elements.
- Ensure preparation and submittal of required safety and health reports for record-keeping information.

D.2.2 Site Safety Manager

The Site Safety Manager reports to the Site Manager and advises the Site Manager on all coordination and implementation of the NPSSP and NIF Project-specific safety and health policies. This individual is the primary responsible party within facility management for assuring compliance with the NPSSP and the applicable federal, state, and local rules and regulations as well as integration of DOE and LLNL safety issues into the NIF Project Site Safety program. The Site Safety Manager will:

- Assist the Site Manager with the coordination of all concurrent NIF Project site work activities related to ES&H.
- Act as an interface among NIF elements on ES&H issues pertaining to the work at the NIF Project site.
- Assist in resolution of any issues related to ES&H among elements performing work at the NIF Project site.
- Make final recommendations on issues of conflict (pertaining to ES&H) among elements performing work at the NIF Project site.
- Coordinate the site safety representatives through the Site Safety Team.
- Assure orientation of all entrants to the NIF Project site in proper safety procedures.
- Develop and implement the safe work recognition and disciplinary programs.
- Be a member of the Facility Integration Team.
- Support the NIF ES&H Assurance Manager and NIF Safety Assurance Coordinator with the performance of safety audits at the NIF Project site.
- Assure orientation of site management regarding policies and procedures, their responsibilities, and compliance.
- Interface with the Emergency Management Division to ensure they are familiar with conditions at the site.

- Working with the BIS IMI Project Safety Manager, develop and ensure orientation of all workers (contractors, LLNL employees and non-LLNL employees) with the site safety rules and requirements.
- Assure compliance with all applicable safety and health procedures through site inspections, documenting such with recommendations to Facility Management and immediate corrective action on “Imminent Danger” situations (IDLH).
- Assure adequate investigations and analysis on all accidents, (noninjury and injury).
- Assure prompt and adequate medical treatment for employees working on the NIF Project site.
- Provide safety and health information for the education of site management and employees to include:
 1. Safe work procedures
 2. Incident analysis (results, causes, and corrective action)
 3. Inspection results analysis
 4. Trend analysis

D.2.3 Site Safety Representatives

The Site Safety Representatives are members of the Site Safety Team and are coordinated by the Site Safety Manager. These individuals have the responsibility to advise the Site Manager on implementation of the NPSSP, the *NIF Infrastructure Health and Safety Plan* (for work under the IMI contract), and safety and health policies and procedures. In addition, these individuals assure compliance with applicable federal, state, local, and LLNL safety and health regulations. The Site Safety Representatives are generally assigned to work with and advise FAMs and will:

- Assure adequacy of necessary personal protective equipment selected for employee use.
- Provide training, as required.
- Assure compliance with all appropriate safety and health procedures through regular site inspection, documenting such with recommendations to management and immediate action on imminent danger situations.
- Support adequate investigation and analysis of incidents (non-injury and injury).
- Provide safety and health training information for management, supervision, and employees.
- Assure preparation and submittal of required safety and health record-keeping information.
- Assure documentation of required safety and health record-keeping information (i.e., inspections, training, first aid logs, OSHA logs, etc.).

D.2.4 LLNL Environment, Safety, and Health Support

D.2.4.1 ES&H Team 2

ES&H Team 2, a section in the LLNL Hazards Control Department (HCD), is a key interface between the NIF Project and the LLNL ES&H support organizations. This team provides technical, advisory, and oversight ES&H support through the Site Safety Team to the NIF Project and to NIF Assurances. The Division Leader for ES&H Team 2 will concur with this NPSSP.

Specifically, ES&H Team 2 will:

- Review safety-related materials and submittals from the NIF Project including construction designs and specifications.
- Review Safety Plans submitted by primary contractors/ subcontractors for NIF Assurances.
- Periodically audit the NIF Project safety performance and compliance with the requirements of the NPSSP at the request of the NIF Assurances Office.
- Perform injury/illness incident record keeping and trending for the NIF Assurance Office and Laboratory management.
- Participate during the Management Prestart Review process and assume the safety support for LLNL workers when an area is transferred from the IMI Contractor to LLNL.
- Review and concur on JHA/IWSs, which cover LLNL workers working at the NIF site, and for this work, perform the same duties as a site safety representative.
- Provide support to the Incident Investigation process at the request of the NIF Project.
- Respond to emergencies at the NIF site if requested by the on-scene Incident Commander (Fire Department) or the NIF Project Office.
- Provide ES&H review of the purchase of LLNL contracted services under the LLNL ISM process.
- Assist in the preparation of written safety documents, e.g., JHA/IWS/SPAs and Facility Authorization Basis documents.

D.2.4.2 Emergency Management Division

HCD, through its Emergency Management Division (EMD) manages the LLNL Fire Department.

The Fire Department will:

- Respond to fire, medical, and hazardous material incidents.

- Provide basic and advanced life support emergency care and emergency medical transport for injuries or illnesses on the NIF Project site.
- Issue burn permits (Hot Work Permits). This responsibility may be delegated to the ES&H Team 2 Fire Protection Engineer.
- Approve all fire safety system (sprinkler, fire, water, or alarm) outages.
- Inspect the NIF site to insure compliance with the LLNL fire protection program, including proper emergency vehicle access.

D.3 NIF Workers

NIF workers include LLNL, non-LLNL, and contractor/subcontractor employees working at the NIF Project site. Non-LLNL employees are visitors, students, participating guests, employees matrixed (or on assignment) from other National Laboratories, contract labor, supplemental labor and vendors, including those working for facility operations contractors. NIF workers will:

- Know and understand the ES&H requirements of their assignments including potential hazards in the work area.
- Perform work assignments in full compliance with guidelines, this NPSSP, and any relevant subordinate safety plan.
- Receive appropriate ES&H training, or equivalent, or shall be escorted and supervised by personnel knowledgeable in the hazards to which they may be exposed.
- Immediately correct or inform the responsible work supervisor of any ES&H-related problems.
- Report all work-related injuries, illnesses, and near-miss incidents to their immediate work supervisor following the reporting process delineated in NIF Project Procedure 5.11, NIF Project Site Incident Investigation.

List of Acronyms

AM	Area Manager
ANSI	American National Standards Institute
APL	Assembly Point Leader
ARO	Assembly, Refurbishment and Operation
APM	Associate Project Manager
BIS	Beampath Infrastructure System
CAL/OSHA	California Occupational Safety and Health Administration
CBSC	California Building Standards Code
CCL	Control Center Leader
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CII	Construction Industry Institute
CM	Construction Manager
CR	Contractor Representative
CSO	Construction Safety Officer
DAPL	Deputy Assembly Point Leader
DOE	Department of Energy
DOT	Department of Transportation
EMD	Emergency Management Division (of HCD)
EPA	Environmental Protection Agency
EPD	LLNL's Environmental Protection Department
ES&H	Environment, Safety, and Health
FHA	Fire Hazards Analysis
FSAR	Final Safety Analysis Report
GFCI	Ground fault circuit interrupter
HCD	LLNL's Hazards Control Department
HSD	LLNL's Health Services Department
HWM	LLNL's Hazardous Waste Management division
ICF	Inertial Confinement Fusion
IMI	Integration Management and Installation
ISM	Integrated Safety Management
IWS	Integration Work Sheet
JHA	Job Hazards Analysis
LLNL	Lawrence Livermore National Laboratory
LRU	Line Replaceable Unit
LTAB	Laser and Target Area Building
MSDS	Material Safety Data Sheet
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association

NIF	National Ignition Facility
NPSSP	NIF Project Site Safety Program
OAB	Optics Assembly Building
OCIP	Owner Controlled Insurance Program
ORR	Operational Readiness Review
OSHA	Occupational Safety and Health Administration
OSP	Operational Safety Plan
OSR	Operational Safety Requirement
OTP	Operational Test Procedures
PICS	Problem Identification & Correction System
PPE	Personnel protective equipment
PSAR	Preliminary Safety Analysis Report
QA	Quality Assurance
QMC	Quality Managers of Construction
SAAR	Supervisor's Accident Analysis Report
SAR	Safety Analysis Report
SDR	System Design Requirement
SE	Special Equipment
SHP	Self-Help Program
SPA	Safe Plan of Action
SWPPP	Storm Water Pollution Prevention Plan
UC	University of California